Analysis of Visitor Behaviour inside the Museum: An Empirical Study

Alessandro Bollo, Lecturer, II Faculty of Architecture, Politecnico of Turin
Research Coordinator, Fondazione Fitzcarraldo

Luca Dal Pozzolo, Lecturer, II Faculty of Architecture, Politecnico of Turin
Director of research, Fondazione Fitzcarraldo

Alessandro Bollo *is graduated in Economy in Turin in 1996, Alessandro Bollo is one of the founder of Fondazione Fitzcarraldo where he now coordinates the Research Unit. Since 2002 he is Coordinator for the Cultural Observatory of Piedmont. Since 2000 is lecturer at the Faculty of Architecture in Turin and he is promoter of the Performing Arts Department at AISM, Italian Association on Marketing studies.*

Luca Dal Pozzolo*, architect, graduated cum laude in 1981, at Politecnico di Torino, Faculty of architecture, is Vice-President of Fondazione Fitzcarraldo, director of the research area of Fondazione Fitzcarraldo and of the Cultural Observatory of Piedmont. He published many books and articles on the design process in different urban and territorial contexts. He is also associate partner of Studioblu, an architectural bureau.*

Abstract
The purpose of this study is to analyse behaviour and usage models within the museum space. Time, attention and the capacity to retain information and knowledge are “scarce resources” during the visit. These factors have not been thoroughly analysed, especially as far as their implications in determining the possibility of interaction between visitor, exhibits and display are concerned. A better knowledge and comprehension of these factors can allow a museum to intervene in different phases of the life cycle of a display (front-end evaluation, formative evaluation, summative evaluation). Observation can be considered a useful methodology to help museums and researchers in the evaluation process. A further objective of the study is to verify the correspondence degree between the exhibition the curators have in mind, and the actual interpretation of the occasional visitor. Information that arise from this methodology approach provide museums with valuable insights for museological and museographical planning as well as for marketing strategies.

Keywords
Visitor behaviour, observation, museum, visitor studies.

Introduction

Some Theoretical References

From the theoretical point of view, observation of the behaviour of visitors within a museum area makes it possible to tackle some particularly important issues and phenomena that occur during a museum experience. This includes the time, the choice of display area, the attention-span and the ability of the information – which is to be considered as a “scarce resource” – to hold the attention of the user, and the way the visit is organised, which is considerably influenced by the layout of the space.

Observation makes it possible to analyse behaviour – in particular, non-verbal behaviour manifested during the visitation – and to assess how the environment (consisting of the architectural space and its museographical arrangement, i.e. the layout, the density of the objects on display, the communication and exhibition methods, etc.) affects the way of participating and interacting with the museum.

Recent theories concerning learning and the construction of meanings in museums tend to consider the visitor no longer as a neutral, passive subject, a "clean slate" or a jar to be filled with information and knowledge by a one-way process of stimulation (from the museum-emitter to the visitor-receiver). On the contrary, visitors are active subjects and determining factors in the (re)construction of meaning: when all is said and done, it is they who formulate possible meanings for the objects and exhibits they encounter on their way. The application of reception theories (Jauss, Stempel, Mukarovsky) to the artistic context actually highlights the role of the utilisation process that becomes an integral part of the artistic event itself. According to Anna Lisa Tota, a work of art "is conceived as being produced at the intersection between the vectors of meanings, inscribed within the work by the artist and the effective utilisation experience of a social actor who identifies which of the possible meanings are to be used".

In other words there is no single, predefined proposal in the production of meaning, but a whole range of possible meanings, directed if anything towards curatorial and exhibition preferences, and yet articulated according to the cultural and existential inclination of each individual visitor.

Theories of learning themselves consider the museum as a place in which informal learning processes depend both on the subjective and individual situation of the visitor (biographical experience, cultural capital, interests, etc.) and on the environment in which process takes place (sensorial stimulation, way of interpreting the museum, morphology of space and arrangement of the objects).

Coming back to the importance of the environment for visitor behaviour, it is important to stress how less cultural capital and specific knowledge in the visitor corresponds to a greater ability of the environment and exhibition area to influence their behaviour and way of using it. As already analysed by Screven [1976], the visitor is free to explore the itinerary, but is also equally free to ignore it, taking in the information only partially or even taking no notice of it: the "ordinary" visitor often does not know why the objects and works on display are important (except for those that are universally known and the object of intense communication), and is not capable of making a personal selection or hierarchy of the objects on show. In this situation, the display of objects is therefore of particular importance, as is their relationship to other elements in the visit (the greater or lesser density of objects along the way). Also of great importance is the information that in a certain sense completes the objects in the collection or temporary exhibition and creates their power of attraction, interest and appeal. In the view of Bourdon and Chebat [2001], when in the presence of works of art that require a certain cognitive effort to be understood (such as works of abstract and conceptual contemporary art) visitors prefer to find their own points of reference in the physical characteristics of the arrangement in order to find their way around. Visitors with weak links with the objects on show establish a strong link with the physical characteristics of the exhibition space, creating points of reference they then use to plan their own cognitive circuit.

From a methodological point of view, the observation study may play a decisive analytical role since, by observing behaviour, it observes facts and actions that are preconditions for learning and non-learning situations. It also identifies the places in the museum where real production of meaning can take place more effectively or in a more widespread manner. This is not because it

is determined beforehand by the decisions made by the experts, but because it can be achieved by those who are able to set in motion, and at last close the circle of that proposal of meaning which would otherwise remain in a state of latency, of unexpressed potential, like a river that has no sea to flow into.

It is clear that observation alone is not able to assess the visitors' actual learning processes, or even the museum's real ability to convey knowledge and describe along which routes the visitors' construction of meaning and significance is directed. The strength and heuristic scope of the observation study is to be found instead in the possibility of studying and influencing the preconditions that enable the museum to make such ambitious objectives possible. In order to make an object able to "speak", the visitor must first notice it and then look at it, and for an information panel to convey knowledge it must be read – and read for a sufficient amount of time for the information to be taken in. The observation study thus makes it possible to assess empirically if a museum or an exhibition is able to ensure the necessary conditions (even if they are not yet sufficient) throughout the visit, so that learning processes and the production of meaning can take place. Taking up the contributions of Eco [1962] and Macdonald [1996] it could be said that the observation study makes it possible to assess the degree of correspondence between the "Model Visitor" and the "Model User", bearing in mind that the "Model Visitor" is the one the curators have in mind when they set up an exhibition or a visit, and for whom they work out their communication strategies using the grammar and syntax that are peculiar to exhibition arrangements: the inclusion or exclusion of possible narratives and objects, the lighting system, the use of available space, the information or the decision not to provide it, the proxemics that regulates use. The "Model User" is the result of the actual encounter with the institution and of the way it helps predetermine the way it is used: how is the museum accessed? What is the overall orientation of the space? What are the possible ways of use in the time available? Who is the target? Who is discriminated against and who is facilitated? Who does it under-represent?

The Methodological Application

The observation study consists in observing, coding, and measuring visiting times, and interpreting visitors' behaviour along the exhibition route.

Unlike what happens in anthropological or ethnographic types of survey, there is no participation by the researcher in observation studies, nor is there any interaction between the observer and the observed. The lack of a direct relationship with the individual being studied avoids any behavioural conditioning that can occur when the individual does interact with the observer.

As we have already mentioned, observation is used to collect data concerning non-verbal behaviour, and therefore does not provide a direct contribution in the problem areas of understanding and learning by the public who visit an exhibition. The use of the observation method does not in any case preclude the simultaneous and integrated use of other data-collection techniques. On the contrary, the possibility of supplementing the observation study with other methods and survey instruments (interviews, focus groups, questionnaires) makes it possible to compare an interpretation of facts and behaviour with the perceptions, opinions and cognitive formulations of the individuals concerning these facts and this behaviour.

Observation as an instrument for assessing the effectiveness of exhibition layouts is a research procedure that was introduced almost a century ago in the United States and is now consolidated both in scientific literature and as empirical material made available to

museographers and researchers. One need only think that already in 1960 an American museologist, Benjamin Gillman, studied the phenomenon of museum fatigue using photography, and in the 1920s the first studies were carried out on visitors: Otto Neurath analysed the effectiveness of the messages and of the museum interpretation system. At that time, Carnegie Mellon scholars were carrying out empirical studies to understand visit behaviour and the interaction between visitors and the museum.

Rendering, Interpreting and Modelling Behaviour

The phases of coding behaviour, and rendering and interpreting data appear to be fairly laborious, especially because this task involves translating the result of a highly subjective and arbitrary operation – the act of observing – into a sign and matrix format that makes verifiable measurements and comparisons possible. From the practical point of view, in order for this translation to be effected, the constituent elements of the exhibition (works, exhibits, panels, captions, etc.) need to be transformed into measurable characters (Screven talks of "learning performances") and the elements of the environment into exhibition surfaces, nodal points, interchange points and stopping areas.

The measurability and application of performance indicators is mainly based on the indexes proposed by Shettel [1973], integrated and tested in a very large number of museums and exhibitions. Examples include the work of Serrell, who has analysed and compared observations from more than 150 museums and exhibitions.[1]

The main indicators used are:

Attraction power. Indicates the relative incidence of people who have stopped in front of an object/exhibit during the exhibition tour. It is calculated by dividing the number of people who stop by the total number of people who have visited the museum or gallery The indicator provides an initial idea of the power of attraction or attention exerted by the object on show. The index varies from 0 to 1, and the closer it is to 1 the greater is the power of the element to attract.

$$\text{Attraction index:} \quad \frac{\text{No. people who stopped}}{\text{No. people observed}} \qquad >0 \; ; <1$$

Holding power: measures the average time spent in front of an information/communication element (e.g. a panel, a video, a caption, etc.). It is calculated by dividing the average time of stay by the time "necessary" to read an element. The calculation of the "necessary" time is established by the researchers, who measure the time that is essential for the entire communication about a particular object to be taken in. The index ranges from 0 to 1 (it may be greater than 1 if the average is greater than the time considered "necessary", but this is a

theoretical case). The closer it is to 1, the greater the ability of the element to hold the visitors' attention will be.

$$\text{Holding-power index:} \quad \frac{\text{Average stopping time}}{\text{Utilization time necessary}}$$

Where possible, it is important to apply both indicators, since joint analysis makes it possible to carry out both quantitative and qualitative assessments. The information panel in a gallery, for example, might have a very high attraction index, but only a modest holding-power index: this would suggest that the panel is placed in an area of great visibility, but that it either provides too much information, or the style and content of the information do not encourage reading.

Utilization times: the average utilisation times (for the complete visit, for particular sections, by type of user)

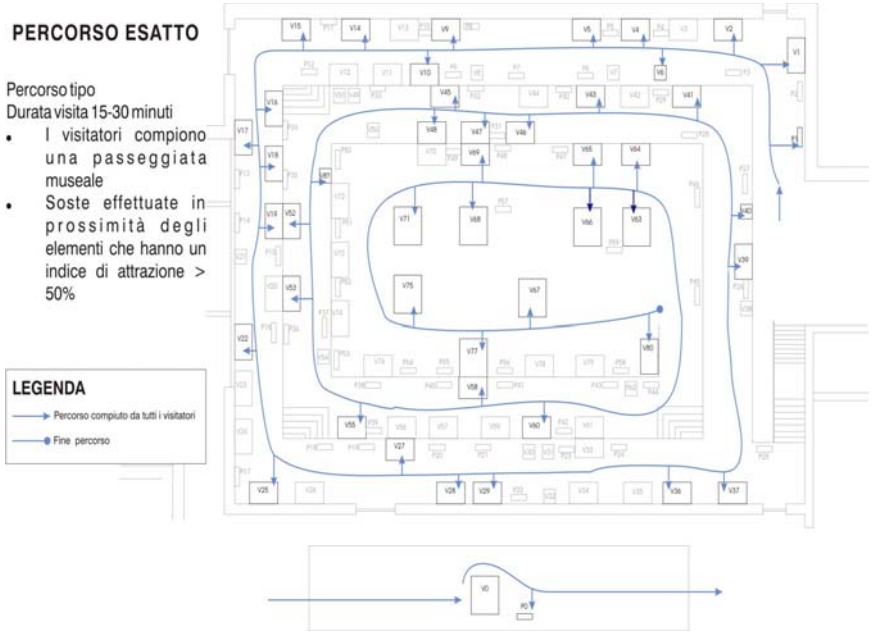
Sweep Rate Index (SRI): this index is calculated by dividing the total size of the exhibition in square metres by the average time spent by visitors within this exhibition area. It is used to calculate if visitors move slowly or quickly through the exhibition. Analysing about 150 museums and exhibitions, Beverly Serrell has come up with an average index value of between 35 sq.m/min for small exhibitions, and 60 sq.m/min for larger ones.

Diligent Visitor Index (DVI): this index is obtained by calculating the percentage of visitors who have stopped in front of more than half the elements that make up the exhibition. The percentage of "diligent visitors" helps evaluate to what extent the exhibition has been visited. The index also helps to assess whether or not the ratio of the density of objects to the time available is adequate. A low value might be interpreted as indicating that the exhibition is too long or too dense for the available time or for the attention-span of the average visitor, rather than as indicating a low level of study and interest.

The SRI and DVI work as audit data, elements that are capable of recreating the conditions of the museum environment in which the visit takes place, thus making it possible to calibrate comparisons between different museums, weighing up the results that emerge from the application of attraction and holding-power indexes.

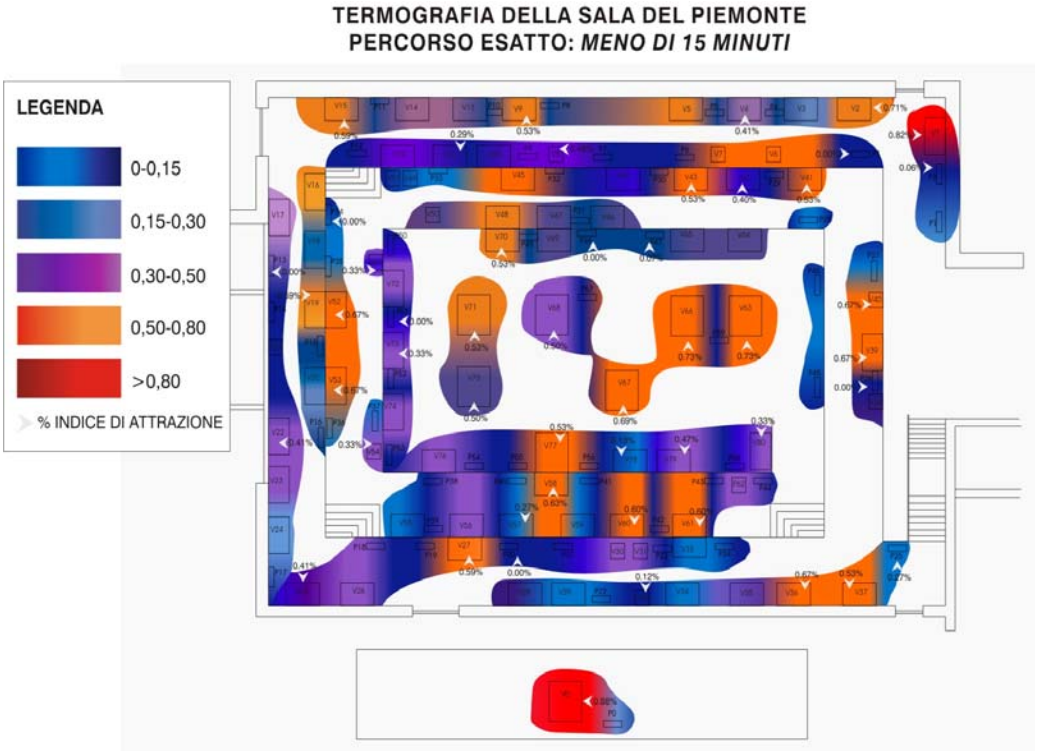
As concerns behaviour modelling, innovative methods of conceptual and graphic representation of the results were experimented during the study. On the one hand, **"typical" flows and paths** were reconstructed graphically, selecting significant final clusters of users that reveal regularities and repetitions in their way of visiting and using the space (groups of people who converge on the same "goals" and the same interchange points along the way, using these to establish the rhythm and respite of their visit).

Picture 1 – Example of a "typical" paths



A form of visual representation was also studied to give an immediate idea of the overall use of the museum area by the visitors. It was designed to highlight any recurrences or differences, according to the clusters being examined (by sociocultural groupings, by the amount of time spent, by the way the visit was carried out). This study led to the creation of a metaphorical structure capable of responding effectively to the desired requirements: that of the "thermograph". By using the metaphor of "thermography" we are able to define the "hot" and "cold" parts of the museum (where "hot" and "cold" indicate higher or lower interaction levels between users and the display). From a graphic point of view, we colour each index value with a different degree of red and blue. The outcome is a map which lets museum management immediately detect the areas of the museum that offer the highest and lowest levels of attraction and interest.

Picture 2 – Example of a "thermography"



Lastly, it should be pointed out how, to facilitate data-entry operations for "automatic" graphic representation of the results, a software prototype called "Miranda" was created. This made it possible to speed up data-entry operations and visualise the behaviour of the visitors in a series of maps showing the exhibition areas with the greatest attraction and holding power over the visitors. The implementation and fine tuning of an application able to interact with mobile devices (such as palmtops) to be used for recording, measuring and archiving behaviour input might facilitate the adoption of this approach as one of the assessment procedures that are available to museum management.

Towards Planning Use of Observation Studies

The information that emerges from the rendering and modelling of behaviour is an interesting tool for in-depth reflection on the organisation of the museum environment and, more in particular, on the ways in which the spatial interaction of the museological and museographical components influence and affect the system of guiding and orienting user behaviour.

Even so, the experiments and the practical research carried out so far give us reason to think that observation studies can become a powerful instrument if used and designed to support and assist long-term decisions concerning the ways in which temporary exhibitions and permanent collections are arranged and communicate to visitors.

The individual museum areas within which the behaviour of visitors has been examined in our studies and tests have been considered as pre-existing verities, as though they were a crystallised landscape in which the visitor acts with various behavioural strategies. Greater or lesser areas of attraction are revealed, as are areas with greater or lesser holding power, or when the visitor does not give the necessary amount of time to information that may be written or provided by video or by some other means, and it is from these discrepancies that friction or imbalances can be inferred between the museum's intended communication and the actual behaviour of the user. However the objectives, expectations and responses the curators and artistic managers hoped to achieve remain in the background without being analysed, and are only just touched upon in the analysis of contradictory elements. In this case, the communication objectives and intentions of the museum are considered as an implicit system that cannot be reconstructed by means of behavioural analysis.

It would be quite another matter if one could work with the objectives and criteria clearly expressed for an exhibition area, with an indication of the hierarchies and priorities of the elements and of the arrangements planned for the information, with an idea of the itineraries planned for the users and an indication of the fundamental stopping points. In this case, the observation study would act as a method for assessing the degree of response to the museological and museographical solutions adopted in terms of the communication objectives achieved and of the ability of the exhibition environment to guide and direct the visit by means of particular narrations and itineraries. In this case, the observation study would provide some confirmation and/or refutation of the behaviour expected by the museological and museographical exhibition designers.

In this situation, the observation study – if it were included right from the initial planning stage of a new temporary or permanent exhibition – would make it possible to close the cycle consisting of: the definition of the objectives, requirements, and performance levels expected from the museological-museographical arrangement; the design and creation of the exhibition materials; the empirical assessment, in various groups of users, of the achievement of the objectives and expected results, in order to go on to a possible further step of "realignment" or improvement.

Once it is organised and put into practice, this procedural mechanism makes it possible to accumulate precious experience in assessing the suitability of the communication systems adopted for the various different target users, analysing discrepancies between what the experts think ought to be or might be the behaviour of the users and what actually emerges from modelling the forms of behaviour recorded.

This is because the empirical assessment of user behaviour cannot be replaced by other formal or informal assessment systems which are normally employed, such as the opinions of other professionals or experts and scholars (who form a restricted target with very particular characteristics when compared with the wide range of possible targets).

Conclusion
The Empirical Study, Some Results and Potential Lines of Study

The study was carried out over a period of two years in three museums in the city of Turin. The museums are of different types and sizes, and they adopt different policies towards the public: they are the national cinema museum (Museo Nazionale del Cinema), the archaeological museum (Museo di Antichità) and a historical museum (Museo della Resistenza). The analyses

and results were achieved for a dual purpose: to provide practical information for the individual museums and, by means of a comparative analysis, to find recurrences that might make some generalisations possible, and that might confirm the results obtained in previous studies (Bitgood, Klein, Hein, Serrell). A total of 357 observations were made, of which 206 at the Museo Nazionale del Cinema, 81 at the Museo della Resistenza and 70 at the Museo di Antichità.[2] At the Museo della Resistenza, observation of the visitors was supplemented by a number of interviews with the visitors observed in order to compare their perceptions with their actual actions and behaviour (in particular with regard to their perception of the time spent on the visit).

The conviction that there is considerable planning potential to be gained from the use and assessment of observation studies to assist and verify museographical and museological decision-making processes, comes from a series of experimental acquisitions from test surveys that we carried out at the three museums. They appeared to suggest some precise guidelines for future work. We here attempt to indicate a series of points that open up a number of considerations. Many of these are a normal part of the routine preoccupations of museologists and museographers, and there is certainly nothing new about them, but the fact that they come from an analysis of the behaviour of particular groups of users makes it possible to identify the intensity and distribution of phenomena in various groups of users. This makes them far less predictable, and with far more interesting consequences on the theoretical level.

Here are some considerations – which are given as examples – that emerge from the surveys carried out.

1) **Hot/cold.** The visitor's time and attention span are always, and in all cases, scarce resources, and they are one of the parameters by which museological and museographical productions need to be assessed. Thermographic rendering of user behaviour always shows hot zones (where the visitor stops most) and cold zones (where the visitor tends to neglect what is on show) both for groups of users that spend a short time in the area being examined, and for groups of users that spend a long time. In the second case, the hot zones tend to expand and erode the cold zones, though significant cold areas still remain. What is interesting here is that the central elements in the hot zones and the cold zones (we might say the points from which the cold and the heat are radiated) coincide significantly for groups based on the amount of time spent in the area. In other words, the time available and the level of interest lead to considerable variations in the size of the hot and cold zones, but far less to their spatial positioning and formation: in all the groups there are clear recurrences among the elements and in the points of greatest and least attraction. In the study carried out in the three museums, the *Diligent Visitor Index* varied between 13% and 37%, generally with fairly low figures. If these particular points – the hottest and the coldest – are analysed, it is fairly easy to find possible explanations for the phenomenon: examples include limited visibility/accessibility of the objects, crowding together of the showcases, long or demanding reading material or, on the contrary, emergence in the environment, particular lighting, the focus on some emotionally involving characteristics, etc. In any case, the hot zones and the cold zones do not necessarily indicate a hierarchy of values, or a different configuration of levels of importance. The metaphor of thermography makes potential practical use interesting: hot zones and cold zones should be designed for different user targets, as a way of managing the visitor's scarce resources – his or her time and attention. In the project, the cold zones might coincide, for example, with elements that are accessory or consequential to the main narration, but in no case

should they involve core elements that are fundamental for understanding a particular section – although this may occur in some cases.

2) **Location benefits**. The studies have shown that in each area there are some key points, which act as hubs in the visit and that have a power of attraction that is quite independent from the content and the objects that are on display. Space is obviously not isotropic, but divided up in different ways and configurations depending on the particular exhibition. In prominent positions, such as crossroads, junctions, and intersections, a significant number of users expect to find objects and information that are consistent with the peculiarity of that point in space. Failure to acknowledge this mechanism means catalysing attention and stopping the visitor in a way that is contradictory to the narration and to the communication of content. The ability of instructions crystallised in the arrangement of space to generate expectations in terms of information and meaning is clearly revealed by this example: the inclusion of seating facing one particular part of the exhibition encourages even those who do not sit down to stop and look in the direction faced by the seating. The chair or seat is seen as a method for directing meaning, and can be translated as follows: a museologist/museographer in good faith would never provide seating in front of objects or exhibits that are not of primary importance. This reveals the delicate role played by the organisation of space in directing attention and bringing about a different perception of the area, which is an important resource to be implemented in order to improve communication.

3) **Straying from the straight and narrow.** When the visit winds its way along a particular path, it is extremely important to create a "watercourse" to be followed, in order to guide the visitor instinctively along the route, without needing repeated confirmation that he or she is going the right way. In the study carried out at the Museo di Antichità, for example, about 20% of those observed went in the wrong direction at the start of the actual museum visit. The tests carried out show that when "wrong" directions are taken, this leads to various forms of interference and disturbance in the museum visit[3]. Some visitors perceived a contradiction in the visit and in the layout of the exhibition, and this obliged them to repeat and overlap some parts of the tour. Others appeared more worried about deciphering the physical features of the display to make sure they were going the right way, than about concentrating on the works on show. The analysis of how some user groups reacted to the environmental instructions and the organisation of the tour reveals some phenomena that are by no means trivial. In some cases the attraction of an individual element, and its conspicuous position in the context of the museum, prevails over the direction indicators, subverting the direction of the tour and leading to unexpected routes. In some people, however, it can be seen that there is difficulty in interpreting the organisation of the space, and not being used to maintaining two levels of perception: with attention focusing on the objects on display while out of the corner of one eye looking where to go. Being able to identify uniform groups based on the problems and difficulties of perceiving space appears to be a useful tool for defining the significant features that also need to connote the way the visits are planned.

4) **Museology/Museography: a global perception.** The study of user behaviour shows a reaction and a procedural adaptation to the organisation of space as a whole, from the articulation of the route to the outlines of the volumes, and the objects contained in the individual showcases. It is the totality of the information contained in various dimensional scales that shapes behaviour: like this, museological decisions concerning the ordering of materials become indissolubly interlocked with their display and the way they are

"staged". This makes it possible to concisely assess the interaction between museological and museographical components as though they were a single complex text. For example, quite apart from the elegance of the way it is presented, a showcase may be neglected due to the large number of pieces it contains, which make it difficult to grasp it in its entirety. On the contrary, a single fragment – again, hard to decipher in terms of the artefact it comes from – may become a focus of attraction if it is presented in a context with few exhibits, in a container of particularly elegant materials. In this case, what is no more than a nail runs the "risk" of being appreciated as some precious gem. The observation study simply records the type of action, the time dedicated, the paths followed, and non-verbal behaviour – revealing a type of behaviour that is stimulated and directed by the complex of signs and objects. This therefore makes it possible to evaluate a global effect that takes into consideration the manifold interactions between museological, museographical and space-arrangement elements.

5) **Perceived time/real time**. As we have already mentioned, the visitor's time is a scarce resource: the overall time devoted to the visit is very often underestimated or not sufficient for an ideal and complete vision of the works on display[4]. The use of different survey methods during the study (observation and face-to-face interviews) made it possible to make an interesting comparison between the actual duration of the visit and the visitors' subjective perception. 53% of the people interviewed did not correctly assess the duration of their visit to the museum, stating a visit time that in some cases was at considerable variance with the actual time: Furthermore, the discrepancy between perception and reality in terms of the duration was unrelated to the actual time spent visiting the exhibition: whether the visits were very short or very long, the percentage of discrepancy and overestimation of the perceived time remains the same. In the great majority of cases the discrepancies tend to overestimate the actual time: people think they have spent far longer in the museum than they actually have. The phenomenon might be explained bearing in mind that the experience of the visit in most cases is a "tiring" process in terms of the consumption of physical and cognitive energy, which means that the time devoted to the museum is, in a certain sense, a "dense" and "extraordinary" time. It is "dense" in that it is characterised by sensorial hyperstimulation and by the activation of non-habitual cognitive processes, and "extraordinary" in the sense that a visit to a museum for many types of users is a one-off activity, unrelated to routine behaviour and practices in the use of everyday time (going to work, taking a lunch break, going shopping, etc.) and thus hard to quantify.

These are but a few of the possible considerations that have emerged from the surveys, and it is necessary to point out how the observation studies do not make it possible to infer anything about the actual cognitive processes of visitors or about their sociocultural characteristics. As pointed out earlier on, the observation study simply makes it possible to assess whether or not the basic hypotheses of a certain special configuration and a certain exhibition arrangement are confirmed or disproved by user behaviour: if the suggested route is actually followed, if an element is looked at or not, if the visitor spends the minimum amount of time in front of a descriptive panel in order to read it. Basically speaking, the study reveals if the necessary preconditions are met in order for there to be an exchange of information that is consonant with the expectations that are implicit in the spatial organisation and in the arrangement of the museum.

The modelling of this behaviour – which in itself provides very interesting topics for reflection – becomes a wide-ranging and innovative tool when combined with specific analyses of the user

groups using other techniques such as questionnaires or interviews in order to gain greater understanding of the cognitive processes taking place within the museum.

In our opinion, this is the most interesting frontier of research, creating a comparative analysis of the modelling of non-verbal behaviour with a study of the segmentation of users, and research into cognitive processes.

The hypothesis we intend to verify in forthcoming research projects concerns the possibility of creating uniform groups only on the basis of different models of non-verbal behaviour, to see if groups of recognisable users or similar cognitive processes correspond to similar types of behaviour models.

These research developments are designed to assess the possibility of creating clusters of phenomena based on recognisable links between behaviour, the characteristics of the visitors, and some cognitive and learning processes. Even negative confirmation – in other words that certain non-verbal behaviour is not related to particular sociocultural groups of users and are thus not necessarily related to particular cognitive processes – would itself be an extremely important result. It might mean that the environmental components of spatial organisation and of museological and museographical productions influence and affect behaviour in a broad and massive way, attenuating differences of a sociocultural nature.

Moving in this direction requires a study programme capable of accumulating a sufficient number of empirical experiences to provide broader and more ample considerations about the initial tests carried out so far.

Acknowledgements

We want to thank Alessia Gioacchino, Teresa Pellegrino and Claude Zamnit-Trevisan for the great contribution to the research project. We expecially want to thank Prof. Ludovico Solima for the valuable advises.

Notes

[1] Serrell B. [1997]. Paying Attention: the Duration and Allocation of Visitors' Time in Museum Exhibitions, in "*Curator*", 40/2, pp. 108-125

[2] According to Serrel, an observer survey can be considered sufficiently reliable if there are at least 50 observations per museums/exhibition (Serrell, 1998).

[3] The Attraction and Holding-power indexes calculated for those who went the wrong way through the exhibition at the Museo di Antichità are considerably lower than the sample average.

[4] In recent studies carried out by the Fondazione Fitzcarraldo (2003) on a sample of 10 museums, 45% of interviewees stated, even though expressing different reasons, that the duration of the visit was not sufficient or consistent with their initial expectations or in relation to an ideal visit capable of fully satisfying their cognitive needs.

References

Andreotti, L., and G. Chiozzi . 1999. “Il comportamento dei visitatori del Museo Civico di Storia Naturale di Milano. Etogramma dei visitatori.” *Museologia scientifica*, Vol. 16, n° 1.

Bollo, A. 2004. “Visitatori sotto la lente. Indagine osservante al Museo Diffuso.” *Quaderni dei Musei Civici della Città di Torino*, n° 10, p. 8–14.

Bourdeau, L., and J.C. Chebat. 2001. “An Empirical Study of the Effects of the Design of the Display Galleries of an Art Galleries on the Movement of Visitors.” *Museum Management and Curatorship*, Vol. 19, n° 1.

Bourgeon-Renault, D. 2000. “Evaluating Consumer Behaviuor in the Field of Arts and Culture Marketing.” *International Journal of Arts Management*, Vol. 3, n° 1 (fall), p. 4–18.

Chaumier, S. 1999. “Les méthodes de l'évaluation muséale. Quelques repères au sujet des formes et des techniques.” *La lettre de l'OCIM*, n° 65.

Donnat, O. 2003. *Regards Croisés sur les Pratiques Culturelles*. Paris: La Documentation Française, DAG, Ministère de la Culture et de la Communication.

Eco, U. 1962. *Opera Aperta*. Milan: Bompiani

Falk, J.H., and L.D. Dierking 2000. “Learning from Museums: Visitor Experiences and the Making of Meaning.” *American Association for State and Local History Book Series*, Lanham MD: Altamira Press

Klein H.J. 1993. “Tracking Visitor Circulation in Museum Setting.” *Environment and Behaviour*, p. 782–800

Hooper-Greenhill, E. 1994. *Museums and their Visitors*. London - New York: Routledge.

Jauss, H. R. 1999. *Ästhetische Erfahrung und literarische Hermeneutik*. Frankfurt am Main: Suhrkamp

Loomis, R.J. 1987. “Museum Visitor Evaluation: New Tool for Management.” *American Association for State and Local History Management Series*, Lanham MD: Altamira Press.

Loomis, R. J. 1973. “Please! Not another Visitor Survey!” *Museum News*, Vol.52, n° 2, 1973, p. 21–26.

Macdonald, S. 1995. “Consuming Science: Public Knowledge and the Dispersed Politics of Reception among Museum Visitors.” *Media, Culture & Society*, n° 17, p. 13–29.

McManus, P. 1989. “Oh, Yes, They Do: How Museum Visitors Read Labels and Interact with Exhibit Texts.” *Curator*, Vol. 32, n° 3, p.174–189.

Savage, G., and J. James. 2001. *A Practical Guide to Evaluating Natural and Cultural Heritage Interpretation*. Sydney: Centre for visitor studies.

Screven, C. G. 1976. “Exhibit evaluation: a goal-reference approach.” *Curator*, n°19/4, p. 271–290.

Screven, C.G. 1990. “Uses of Evaluation Before, During and After Exhibit Design.” *ILVS Review*, Vol.1 n° 2, p. 36–66.

Serrell, B. 1997. “Paying Attention: the Duration and Allocation of Visitors’ Time in Museum Exhibitions.” *Curator*, Vol. 40, n° 2, p. 108–125.

Serrell, B. 1998. *Paying Attention: Visitors and Museum Exhibitions*. American Association of Museums: Washington DC.

Serrell, B. 2002. “Are They Watching? Visitors and Video in Exhibitions.” *Curator*, Vol. 45, n° 1, p. 50–64.

Shettel, H. 1973. “Exhibits: Art form or educational medium?” *Museum News*, Vol. 52, n° 1, p. 32–41.

Shettel, H. 1992. “Front-end Evaluation: Another Useful Tool.” *ILVS Review*, Vol. 2, n° 2, p. 275–280.

Solima, L. 2002. Indagine osservante sui comportamenti di fruizione dei visitatori della sezione “Partenope e Neapolis” del Museo Archeologico Nazionale di Napoli. typescript..

Tota, A. L. 2002. *Sociologie dell’arte. Dal museo tradizionale all’arte multimediale*. Rome: Carocci ed.

Veron, E., and M. Levasseur. 1990. *Ethnographie de l’exposition: l’espace, le corps et le sens*. Paris: Bibliothèque Publique d’information, Centre Georges Pompidou/Gracett.

Wolf, R.L. 1980. “A Naturalistic View of Evaluation.” *Museum News*, Vol.58, n° 6, p. 39-45.